

**Destroy this report when no longer needed. Do not return
it to the originator.**



DEPARTMENT OF THE ARMY
WATERWAYS EXPERIMENT STATION, CORPS OF ENGINEERS
P. O. BOX 631
VICKSBURG, MISSISSIPPI 39180

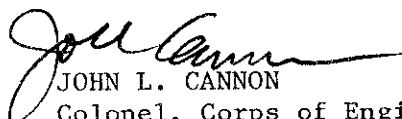
IN REPLY REFER TO: WESEV

30 September 1978

SUBJECT: Transmittal of Technical Report D-78-38

TO: All Report Recipients

1. The technical report transmitted herewith represents the results of Work Unit 2A07 regarding experimental deposition of dredged material on salt marsh. This work unit was conducted as part of Task 2A (Effects of Marsh and Terrestrial Disposal) of the Corps of Engineers' Dredged Material Research Program (DMRP). Task 2A was a part of the Habitat Development Project (HDP) of the DMRP and was concerned with the definition and quantification of the effects of dredged material disposal on shallow water, wetland, and terrestrial sites.
2. The purpose of this research (Work Unit 2A07) was to evaluate the recovery response of salt marsh vegetation to deposition of sand, sandy clay, and clay dredged material at various depths between 8 and 91 cm. The results of this study indicate that it may be possible to alter the elevations of a marsh through disposal of dredged material without loss of the functional values of that system. This research is largely conceptual in nature and has not been extensively field tested; application of this study to a large-scale disposal project should be approached with particular caution.
3. The specific findings of this study are distinct from other research conducted within the HDP, and the concept of the recovery of marsh smothered with dredged material is not addressed in other studies. Generally related work units are 4A04A1, 4A04A2, 4A04B, and 4A05, each of which deal with aspects of salt marsh productivity. Supportive and comparative data are available in Synthesis Report DS-78-15 entitled "Upland and Wetland Habitat Development with Dredged Material: Ecological Considerations" (2A08), and in the analysis of the results of field studies at Windmill Point, Virginia (4A11); Buttermilk Sound, Georgia (4A12); Apalachicola, Florida (4A19); Bolivar Peninsula, Texas (4A13); Pond No. 3, California (4A18); and Miller Sands, Oregon (4B05). Together these research products will provide the Corps with a basis for sound management decisions regarding disposal in marsh-estuarine systems.


JOHN L. CANNON
Colonel, Corps of Engineers
Commander and Director

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER Technical Report D-78-38	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) THE EFFECTS OF SMOTHERING A SPARTINA <u>ALTERNIFLORA</u> SALT MARSH WITH DREDGED MATERIAL		5. TYPE OF REPORT & PERIOD COVERED Final report
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) Robert J. Reimold Michael A. Hardisky Patrick C. Adams		8. CONTRACT OR GRANT NUMBER(s) Contract No. DACW21-75-C-0074
9. PERFORMING ORGANIZATION NAME AND ADDRESS University of Georgia Marine Extension Service Brunswick, Ga. 31520		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS DMRP Work Unit No. 2A07
11. CONTROLLING OFFICE NAME AND ADDRESS Office, Chief of Engineers, U. S. Army Washington, D. C. 20314		12. REPORT DATE July 1978
		13. NUMBER OF PAGES 483
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) U. S. Army Engineer Waterways Experiment Station Environmental Laboratory P. O. Box 631, Vicksburg, Miss. 39180		15. SECURITY CLASS. (of this report) Unclassified
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report) Approved for public release; distribution unlimited.		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES Appendices A through D to this report were reproduced on microfiche and are included in an envelope inside the back cover.		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Dredged material Dredged material disposal Marsh development Salt marshes Vegetation establishment		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) A study of the capability of high salt marsh to recover from disposal of dredged material indicates that smothering high marsh could be a feasible disposal alternative but should be used with caution and should only be employed when other alternatives are economically or physically infeasible. The study investigated the impact of smothering short form <i>Spartina alterniflora</i> in Glynn County, Georgia, with three types of dredged material (Continued)		

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

20. ABSTRACT (Continued).

(coarse sand, sand and clay mixed, and clay), at six depths (8, 15, 23, 30, 61, and 91 cm), and at different stages of plant growth (February, July, and November). Corrugated metal pipes (0.9-m diam) were sunk into the marsh and used as containers for dredged material. The impact of disposal was evaluated over two growing seasons.

Spartina alterniflora was able to penetrate up to 23 cm of each type of dredged material and exhibited biological growth and production nearly equal to that in undisturbed marsh. These depths, being within the elevational range of the marsh, indicate that accurate tidal and elevational data should be collected before disposal on a marsh and that deposition should not exceed the elevational limit of the existing marsh.

The study also included an assessment of the impact of smothering on selected species of crabs and snails. Crabs were able to recolonize areas covered with up to 23 cm of clay dredged material and 15 cm of sand. Snails rapidly recolonized material placed 8 and 15 cm deep. Faunal recovery may depend on the proximity of the disposal area to natural populations and the extent of the smothered areas.

While smothering operations can offer an alternative to disposal, the technique cannot be considered proven and must be approached with care.

THE CONTENTS OF THIS REPORT ARE NOT TO
BE USED FOR ADVERTISING, PUBLICATION,
OR PROMOTIONAL PURPOSES. CITATION OF
TRADE NAMES DOES NOT CONSTITUTE AN OF-
FICIAL ENDORSEMENT OR APPROVAL OF THE
USE OF SUCH COMMERCIAL PRODUCTS.